1. A pulsed laser system comprising:

a laser pump;

a laser rod;

a reflector interposed between the laser pump and the laser rod, through which energy from the laser pump enters the laser rod;

an output reflector through which energy is emitted from the laser rod;

a switch interposed between the laser rod and the output reflector that, when closed, causes energy to be stored in the laser rod for a desired period of time and that, when opened, allows energy to be emitted from the laser rod during an emission period;

a control device constructed to allow a primary laser pulse emitted from the laser rod during the emission period to impinge on a workpiece and to prevent at least a portion of secondary laser emission occurring after the primary pulse during the emission period from impinging on the workpiece.

2. The pulsed laser system of claim 1 wherein the control device comprises an optical shutter.

3. The pulsed laser system of claim 1 wherein the optical shutter comprises an acousto-optic modulator, an electro-optic modulator, a liquid crystal modulator, or a high-speed optical switch.

4. The pulsed laser system of claim 1 wherein the control device prevents the secondary laser emission from impinging on the workpiece by diffracting, deflecting, redirecting, or shuttering unwanted secondary laser emission away from the workpiece.

5. The pulsed laser system of claim 1 wherein the control device allows the primary laser pulse to impinge on the workpiece by diffracting, deflecting, redirecting, or shuttering the primary pulse toward the workpiece.

6. The pulsed laser system of claim 1 wherein the control device prevents more than eighty percent of the secondary laser emission occurring during the emission period after emission of the primary pulse from impinging on the workpiece.

7. The pulsed laser system of claim 1 wherein the control device begins preventing secondary laser emission occurring during the emission period from impinging on the workpiece immediately after emission of the primary pulse.

8. The pulsed laser system of claim 1 wherein the laser pump comprises a diode pumped system.

9. The pulsed laser system of claim 1 wherein the laser pump comprises a lamp pumped system.

10. The pulsed laser system of claim 1 wherein the switch is a Q-switch.

11. The pulsed laser system of claim 10, wherein the Q-switch is configured to close when it receives a control signal and to open when the control signal is not applied to the Q-switch.

12. The pulsed laser system of claim 11, wherein the control signal is a high-frequency signal.

13. The pulsed laser system of claim 11, wherein the control signal is a high-voltage signal.

14. The pulsed laser system of claim 11, wherein the control signal is triggered by a trigger signal.

15. The pulsed laser system of claim 1, wherein the switch is arranged to be closed for a fixed, predetermined period of time regardless of repetition rate of the primary laser pulse, over a range of repetition rates.

16. The pulsed laser system of claim 15, wherein, at low repetition rates of the primary laser pulse, the control device prevents the secondary laser emission occurring after emission of the primary pulse from impinging on the workpiece, and, at high repetition rates of the primary laser pulse, there is no secondary laser emission occurring during the emission period after emission of the primary pulse.

17. The pulsed laser system of claim 1, wherein the laser pump is constructed for continuous operation.

18. A method of operating a pulsed laser system comprising the steps of:

providing a pulsed laser system comprising a laser pump, a laser rod, a reflector interposed between the laser pump and the laser rod, through which energy from the laser pump enters the laser rod, an output reflector through which energy is emitted from the laser rod, and a switch interposed between the laser rod and the output reflector that, when closed, causes energy to be stored in the laser rod for a desired period of time and that, when opened,

allows energy to be emitted from the laser rod during an emission period;

operating the pulsed laser system so as to cause laser energy to be emitted during a plurality of emission periods;

allowing a primary laser pulse emitted from the laser rod during each emission period to impinge on a workpiece; and

preventing at least a portion of secondary laser emission occurring during each emission period after emission of the primary pulse from impinging on the workpiece.

19. The method of claim 18, further comprising the step of closing the switch for a fixed, predetermined period of time regardless of repetition rate of the primary laser pulse, over a range of repetition rates.

20. The method of claim 19, wherein the fixed, predetermined period of time is the longest energy storage period that can be implemented at the highest repetition rate of the range of repetition rates.

21. The method of claim 18, wherein the step of preventing the secondary laser emission occurring during the emission period after emission of the primary pulse from impinging on the workpiece is performed at low repetition rates of the primary laser pulse, and wherein, at high repetition rates of the primary laser pulse, there is no secondary laser emission occurring during the emission period after emission of the primary pulse.

22. The method of claim 18, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises micromachining a worksurface with a controlled laser pulse width.

23. The method of claim 22, wherein the step of micromachining a worksurface comprises micromachining a semiconductor circuit on a silicon substrate.

24. The method of claim 18, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises trimming of a trimmable component.

25. The method of claim 24, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises trimming of a thick-film electrical element.

26. The method of claim 24, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises trimming of a thin-film electrical element.

27. The method of claim 24, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises trimming of a resistor.

28. The method of claim 24, wherein the step of allowing the primary laser pulses to impinge on a workpiece comprises trimming of a capacitor.

29. The method of claim 24, wherein the step of operating the pulsed laser system comprises operating the laser pump continuously.

30. A method of operating a pulsed laser system, comprising the steps of:

providing a pulsed laser system comprising a laser pump, a laser rod, a reflector interposed between the laser pump and the laser rod, through which energy from the laser pump enters the laser rod, an output reflector through which energy is emitted from the laser rod, and a switch interposed between the laser rod and the output reflector that, when closed, causes energy to be stored in the laser rod for a desired period of time and that, when opened, allows energy to be emitted from the laser rod during an emission period; and

operating the pulsed laser system, over a range of repetition rates, so as to cause laser energy to be emitted during a plurality of emission periods at each repetition rate, at least a portion of the laser energy emitted during the emission periods being directed toward the target structure;

the step of operating the pulsed laser system comprising closing the switch for a fixed, predetermined period of time prior to each emission period regardless of repetition rate of the primary laser pulse within the range of repetition rates;

the step of operating the pulsed laser system further comprising operating the pump continuously at constant power.

31. The method of claim 30, wherein the step of directing at least a portion of the laser energy emitted during the emission periods toward the target structure comprises performing functional or passive trimming of the target structure.

32. The method of claim 30, wherein the step of operating the pulsed laser system comprises trimming of a trimmable component.

33. The method of claim 32, wherein the step of operating the pulsed laser system comprises trimming of a thick-film electrical element.

34. The method of claim 32, wherein the step of operating the pulsed laser system comprises trimming of a thin-film electrical element.

35. The method of claim 32, wherein the step of operating the pulsed laser system comprises trimming of a resistor.

36. The method of claim 32, wherein the step of operating the pulsed laser system comprises trimming of a capacitor.

37. The method of claim 32, wherein the step of operating the pulsed laser system comprises micromachining a worksurface.

38. The method of claim 37, wherein the step of micromachining a worksurface comprises micromachining a semiconductor circuit on a silicon substrate.

39. The method of claim 32, wherein the step of operating the pulsed laser system comprises operating the laser pump continuously.

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